

Hepatitis B antigen and antibody in a male homosexual population

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SUMMARY Sera from 600 male homosexual patients were tested for hepatitis B antigen (HBs Ag) and its antibody (HBs Ab). Thirty-one men (5.2%) were positive for HBs Ag. Testing for HBs Ab by immuno-osmoelectrophoresis 33 men (5.5%) were positive. However, sera of 85 patients negative for HBs Ab by routine methods were examined for HBs Ab by radioimmune assay. Thirty (35%) sera were found to be positive. No absolute correlation between the detection of HBs Ag, or previous history of hepatitis, jaundice, or current hepatitis was found. Similarly there was little correlation between presence of HBs Ab and this history. These observations suggest that the male homosexual population represents a pool of individuals within which the hepatitis B virus is readily transmitted, mainly as a subclinical infection although clinical hepatitis does occur in some patients. It is suggested that further work is necessary to determine whether the high antibody rate in male homosexuals is related more to sexual practice than to promiscuity.

Introduction

An association between the incidence of hepatitis B antigen, its antibody, and sexual activity has been described by several authors (Vahrman, 1970, 1973; Heathcote and Sherlock, 1973; King, 1974). A significantly higher incidence of hepatitis B antigen (HBs Ag) was found among patients attending clinics for sexually transmitted diseases than in a new blood donor population (Fulford *et al.*, 1973). Within this population the male homosexual patients are most frequently positive for HBs Ag (Jeffries *et al.*, 1973).

At the West London Hospital some 27 to 31% of the male patients who attend the Department of Genito-Urinary Medicine admit to homosexual practices (Fluker, 1974).

The survey was performed to investigate the incidence of HBs Ag and its antibody (HBs Ab) in a large homosexual population.

Patients and methods

Between 11 February 1974 and 24 January 1975, 600 male homosexual patients were admitted to the survey. At the time of consultation each patient was asked if he had a previous history of jaundice, hepatitis, or other liver disease. The replies to these questions were recorded. Because there is a marked geographical variation in the incidence of HBs Ag carriage and HBs Ab detection the country of origin of each patient was noted. In addition to investigation of the presenting venereological symptoms, blood was taken and sent to the virology laboratory.

HBs Ag was detected by immuno-osmoelectrophoresis (IOEP) and by reverse passive haemagglutination of antibody-coated sheep cells (Hepanosticon, Organon Technika). For most of the survey HBs Ab was detected by IOEP. Ninety HBs Ag negative sera were tested for HBs Ab by radioimmune assay (RIA). Of these sera, five had been found positive for HBs Ab by IOEP and were included as internal standards, the remaining 85 had been reported as HBs Ab negative by IOEP.

Results

The mean age of these 600 men was 29.3 years, ranging from 16 to 64 years.

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Thirty-one men (5.2%) were positive for HBs Ag. Twenty-eight (4.7%) gave a history of jaundice, hepatitis, or liver disease of whom only five (0.8%) were found to have HBs Ag. Only one patient was clinically jaundiced at the time of examination. The association of patient age with a positive HBs Ag test is shown in Table 1. The country of origin of the patients was: British Isles 22; USA 4; Australia 2; South Africa 1; Spain 1; China 1. With the exception of the Chinese patient, all were Caucasian.

In the first series of the tests for HBs Ab by IOEP the following results were obtained. Thirty-three men (5.5%) were found to be positive. Only five patients with HBs Ab gave a history of hepatitis, jaundice, or liver disease.

Table 1 Age distribution of HBs Ag patients

Age group (years)	No.	No. positive
16-20	36	3
21-25	146	6
26-30	211	10
31-35	102	7
36-40	48	3
41-45	35	2
46-50	12	—
51-55	7	—
56-60	1	—
61-65	2	—

Of the sera of 85 patients negative for HBs Ab by routine methods and examined for HBs Ab by RIA, 30 (35%) were found to be positive. Only three patients shown to have antibody by RIA gave a history of jaundice or hepatitis. One other patient had attended his general practitioner who had made a clinical diagnosis of glandular fever. Two patients who lived together had both had hepatitis, one in December 1974 and the other in January 1975. Only one patient with HBs Ab was known to be a contact of a patient with HBs Ag. An association of patient age with a positive HBs Ab result, by either method, is shown in Table 2. The country of origin of the patients was: British Isles 58; Canada 1; Australia 1; South Africa 2; Spain 1. All were Caucasian.

Discussion

The incidence of HBs Ag in volunteer blood donors in the United Kingdom varies from about 1:500 to 1:1000 (Zuckerman, 1975). The detection of HBs Ag in 5.2% (31/600) of the male homosexual patients attending the Department of Genito-Urinary Medicine confirms the finding by Jeffries *et al.* (1973) of a relatively high incidence of HBs Ag in male

Table 2 Age distribution of HBs Ab patients

Age group (years)	No. with antibody
16-20	—
21-25	9
26-30	27
31-35	12
36-40	7
41-45	4
46-50	2
51-55	2
56-60	—
61-65	—

homosexuals in London. Similarly Vahrman (1973) showed that the correlation between homosexuality and clinical viral hepatitis was highly significant. In his series of 32 men with HBs Ag positive hepatitis no fewer than 20 were homosexual.

Although 31 of 600 men gave a positive test for HBs Ag only one patient was suffering from hepatitis at the time of detection. The remaining 30 patients were seen sporadically during the survey. None complained of any symptoms of liver disease at any time. Only two patients remained positive for HBs Ag at the end of the survey, the remainder having become negative.

With the advent of a highly sensitive radioimmune assay for HBs Ab, the detection of antibody greatly improved. Whereas 33 men were found positive by IOEP in 600 men, 35% of 85 sera tested by RIA were positive for HBs Ab. HBs Ab was detected in only four of 276 (1.45%) of blood donor sera tested by RIA at this hospital. As in the case of HBs Ag there was remarkably little correlation between the presence of HBs Ab and a history of jaundice, hepatitis, or contact with hepatitis.

These observations suggest that the male homosexual population represents a pool of individuals within which the hepatitis B virus is readily transmitted, particularly subclinical infection. Clinical hepatitis does occur in some patients. The patients with clinically inapparent infection represent a potential hazard to the staff of venereal disease clinics. The risk is offset to some extent because information concerning the sexual habits of the patient is sought during interview, and the appropriate precautions regarding the handling of his blood specimens may be adopted. However this information is not usually sought during general medical or dental examination and the symptomless positive homosexual patient may present a greater risk to medical and dental staff in other areas of medical practice. Reinicke *et al.* (1972) have suggested that those who are persistently HBs Ag positive with evidence of liver dysfunction are more infectious than those with normal liver function.

Biochemical tests of liver function should be performed on those patients found to be carrying HBs Ag.

Vahrman (1970, 1973) claimed that hepatitis B might be sexually transmitted. Further evidence for this view was produced by Hersh *et al.* (1971), Heathcote and Sherlock (1973), and Fulford *et al.* (1973). The results of this study confirm these observations. As an indicator of past cumulative experience of HBs Ag a sensitive technique—that is, radioimmune assay—for the detection of HBs Ab is probably of more value than detection of the HBs Ag carrier rate. Papaevangelou *et al.* (1974) studied hepatitis B antigen and antibody rates in prostitutes. They suggested that the increased incidence of HBs Ab in older prostitutes was, in part, associated with the duration of prostitution. It is possible that the increased incidence of antibody with age is the result of intermittent exposure to small doses of antigen by a non-parenteral route. Further work is necessary to determine whether the high antibody rate in male homosexuals is related more to sexual practice than to promiscuity. In this context it is of interest that 25 (80·7%) of the 31 patients with HBs Ag had a sexually transmitted infection at the time that the antigen was detected.

Only five (16·1%) of the patients with HBs Ag gave no previous history of sexually transmitted infection.

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